

16. NOTES ON TWO SPECIES OF *HEMIDACTYLUS*  
(GEKKONIDAE : REPTILIA) IN BHUBANESWAR

The observations described below were made in Bhubaneswar, Orissa. One of the two common domestic species in the new town of Bhubaneswar is *Hemidactylus brooki*. The other is almost certainly *H. leschenaulti*. In our house, the latter species seems the commoner by far, but this may be due to the fact that *H. brooki* is more shy. The numbers of 'groups' of eggs found of the two species are the same; however, the number of eggs found of *H. leschenaulti* are almost twice as many as for *H. brooki*.

## OVIPOSITION

Twelve 'groups' of eggs were found from 1964-66, 11 in our house and 1 in the laboratory, situated in the Agricultural College. A 'group' of eggs consists of those found simultaneously at the same spot. All the eggs were found in dark places, most commonly in drawers and sometimes in distribution boxes of electrical connections. Eggs of *H. brooki* were found between April 9 and August 29; those of *H. leschenaulti* between April 4 and July 7. (Most copulations were observed in the month of May). Table 1 gives the dates of collection and hatching of the eggs. It is clear that eggs hatch in pairs. This suggests that they are laid in pairs as has been stated previously as a generalisation about geckos (Goin & Goin 1962, p. 268). What is striking is that the periods between the pairs of hatches is fairly constant for *H. leschenaulti*, varying from 9 to 13 days. The only similar period obtained for *H. brooki* was 29 days. In *H. leschenaulti* therefore, it would seem reasonable to infer that the eggs of one group are laid by a single female who returned to the same laying place as successive pairs of eggs became ready to be laid.

This observation does not seem to be generally known. Smith (1935, p. 27) for instance, suggests that groups of eggs found together are the layings of several different females. The above data make this interpretation unlikely. The period between consecutive layings of a female *H. leschenaulti* would seem to be about 11 days in this population. There are not enough data to provide similar evidence for *H. brooki*. However, if in the latter species also a female returns regularly to the same place for laying, the interval between consecutive layings is probably considerably longer in *H. brooki*. This I infer from the much longer periods recorded between collection of eggs and the first hatch in *H. brooki* (average 26 days) compared with those for *H. leschenaulti* (average 11 days). The average number of eggs per group is 2.3 for *H. brooki* and 4.0 for *H. leschenaulti*. The bigger average for *H. lesche-*

TABLE 1  
DATA ON HATCHING OF EGGS

Group	Date collected	No. of eggs	Hatches		
			First set	Second set	Third set
<i>H. brooki</i>					
1	9/4/64	1	6/5 (27)		
4	23/8/64	4	27/8; 29/8 (4)		
5	25/4/65	2	16/5; 16/5 (21)	25/9	[29]
8	9/7/65	4	3/8 (25)		
9	13/7/65	1	21/8 (39)		
10	29/8/65	2	6/10; 6/10 (38)		
<i>H. leschenaulti</i>					
2	23/5/64	1	30/5 (7)		
3	28/6/64	7	5/7; 5/7 (7)		
6	7/7/65	2	27/7 (20)	16/7; 16/7	[11]
7	8/7/65	3	10/7 (2)	21/7; 22/7	[11]
11	4/4/66	6	10/4; 10/4 (6)	19/4; 19/4	[9]
12	18/4/66	5	13/5; 13/5 (25)		29/4 [10]

Note :—Figures in round brackets indicate periods from collection to first hatch.

Figures in square brackets indicate periods between first hatches of consecutive sets.

*naulti* would be expected if *H. brooki* laid eggs after longer intervals. The maximum period between the collection of an egg and its hatching is 39 days for *H. brooki* and 32 days for *H. leschenaulti*.

The eggs of both species are very variable in size. Table 2 shows the sizes of the largest and smallest eggs in each group. The small

TABLE 2  
EXTREME SIZES OF EGGS IN DIFFERENT GROUPS

Group	No. of eggs	Largest egg	Smallest egg
<i>H. brooki</i>			
4	4	.86 × .76	.79 × .69
5	2	.84 × .75	.84 × .74
8	4	1.18 × 1.02	.89 × .75
10	2	.88 × .76	.87 × .76
<i>H. leschenaulti</i>			
3	7	.87 × .76	.80 × .68
7	3	.85 × .76	.83 × .74
11	6	1.12 × 1.10	1.16 × 1.04
12	5	1.20 × 1.06	1.14 × 0.96

variation in size within a group compared to the variation in the species also suggests that a group of eggs is laid by a single female. Darwin (1882, p. 260) and many subsequent authors have remarked on the idiosyncratic quality of hen's eggs. However, much more data will be necessary before this inference is given statistical precision.

### MOVEMENTS

In order to observe the movements of an individual gecko, I first tried painting individuals with different colours of nail varnish. However, the application of the nail varnish almost always induced the lizard to moult it off within 2 or 3 days, so that this method was not successful.<sup>1</sup>

<sup>1</sup> However, in Calcutta, though the nail varnish was sloughed off as quickly as in Bhubaneswar, marking did provide some striking observations. There, in a first floor flat, I had started the routine of catching geckos anywhere in the flat and then releasing them at a fixed place. From these observations, I got the impression that usually during the winter, geckos tended to return as quickly as possible to the place where they were captured. This included a gecko which was released at a spot diagonally across the flat from where it was captured, and had returned to the place of capture in about 12 hours. In the part of the year when they were sexually active however they tended to remain in the room where they were released. In the Calcutta population I have also observed cannibalism, breaking up of a copulation by a third individual leading to vicious fighting, and licking of the genitalia by both sexes after copulation. I have not, however, been able to find out what species the Calcutta population was,

I have, however, been fortunate enough in Bhubaneswar to find several individuals of *H. leschenaulti* with deformities of the tip of the tail which are very good distinguishing marks. 4 different individuals have so far been so distinguished. The first had a tail which was forked at the tip. The second had a double bend at the tip which is, therefore, S-shaped. The third had the tip deflected to the left and the fourth to the right. However only the two former have so far provided data enough to test statistically. Observations on Gecko 1 were started on 21/iv/64, and it has not been seen since 2/viii/65. Observations on Gecko 2 were started on 26/viii/64 and were continued till 3/ii/67. Every time a gecko was seen, the time and the place where it was observed were recorded. These observations were then arranged according to date. This series was then divided into three roughly equal portions for each gecko separately. Results are shown in Table 3. The

TABLE 3  
OBSERVATIONS ON MOVEMENTS OF TWO INDIVIDUALS OF *H. leschenaulti*

Gecko 1	Room(s)				Total
Period	A	C	B, D		
8/1-5/2	1	16	4		21
17/2-11/5	6	7	6		19
25/5-25/11	15	3	2		20
$\chi^2 = 25.51$					
Gecko 2	Room(s)			Total	
Period	C	ADE			
9/1-19/2	26	0		26	
13/2-15/6	18	8		26	
16/6-24/12	17	9		26	
$\chi^2 = 10.94$					

letters A to E each refer to a particular room. The value of  $\chi^2$  in Table 3 for Gecko 1 should be interpreted with caution due to the small numbers. However, the probability of obtaining such a value is so small ( $P < 0.001$ ) that we can safely infer that there is a difference in the proportions of observations in different rooms during different parts of the year. In the case of Gecko 2 also the difference is significant ( $P < 0.01$ ). Further, since the two latter periods do not show any difference, we can group them into one period. If we do this we get a  $2 \times 2$  table with  $\chi^2_1 = 10.9$  ( $P < 0.001$ ). Interpreting this biologically we see that during January and February these lizards are very conservative in their movements, whereas later in the year, that is roughly when they are sexually

